ILLINOIS ENVIRONMENTAL PROTECTION AGENCY MEMORANDUM

DATE: April 25, 1979

TO: Division File

FROM: James Brossman

SUBJECT: Cook County - McCook/Reynolds Aluminum - 03100600
Technical Memo - Re: Variance Petition

This is in response to a request by Reynolds' Metals Company to operate a waste disposal site at variance with the provisions of Rule 303 (a) and (b) of Chapter 7 of the Illinois Pollution Control Board Rules and Regulations.

The property is owned by Vulcan Materials Company and leased to Reynolds' Aluminum. The site consists of an old quarry; the east side of which is adjacent to Reynolds' Aluminum Plant, at the corner of 47th Street and First Avenue in McCook. The disposal site is located on the east half of the northwest quarter of Section 10, T. 38N, R. 12E., Berwyn Quadrangle.

The quarry is 80 to 85 feet deep and covers approximately 3.5 acres. The quarry rock is a thin bedded, tan to buff colored, silty, vesicular dolomite of the Niagaran Series. Bedding thickness increases in the lower portions of the quarry wall. The unit is highly jointed; particularly in the upper portions of the exposure.

Groundwater occurs in joints, fissures and solution cavities in the dolomite. Transmission of groundwater through this formation is dependent upon the number and orientation of the voids mentioned above. There is little physical or chemical renovation of contaminated groundwater moving through this type of system.

OPERATIONAL HISTORY-
Little information is available concerning disposal activities at this site prior to the mid 1960's. The following information has been supplied by Mr. Ray Buhrmaster, Reynolds' Environmental Control Engineer; Robert Koch, formerly of this Agency; and my own observations at the site.

The site has been used as a dump for plant wastes since 1942. At that time the plant was owned by Alcola Defense Plant Corporation, who later sold it to Reynolds' Metals Company in 1946.

Controlled disposal began in 1970, when the Village of McCook limited disposal to the following wastes:

1. Demolition Waste
2. Dirt
3. Wood
4. Banding Iron
5. Sludge from Several Treatment Processes
6. Fluxing Tubes (Graphite)

Since the mid 1960's, 25 to 30 thousand gallons per week of sludge have been dumped into the quarry. This amounts to approximately 20 million gallons of sludge. The sludge is approximately two percent solids. The results of an analysis of the solid portion of the sludge accompanies this report.

Site operation consisted of dumping refuse from the rim of the quarry. No attempt was made to compact or cover the refuse.

The current operation differs little from that of the past except that since October, 1978, only dirt, brick and concrete are disposed of at the site.

An underground fire was discovered in October of last year. That fire was still burning April 12, 1979, when I visited the site with Mark Hutson. Mr. Buhrmaster has informed me in an April 20th telephone conversation that the fire is out. This has not been confirmed by our office.

IN SUMMARY:

1. The site has been a dump for plant wastes since the early 1940's. According to my estimates, the pit is about two-thirds full. Given an original area of 3.5 acres and an average depth of 80 feet, I estimate that about 300,000 cubic yards of solid refuse has been deposited in the quarry. Little is known about the nature of this refuse.

2. Roughly 20 million gallons of sludge has been dumped in the quarry since the mid 1960's.

3. The status of the underground fire is questionable.

4. The quarry is in a bedrock unit that is a major aquifer for much of northeastern Illinois. Local dependence upon this aquifer is not known at this time.

5. Once contaminated, groundwater moving through an aquifer of this type receives little natural renovation.

CONCLUSIONS:

The site has received plant wastes for about 36 years; from 1942 to late 1978. Based on rough calculations, about 300,000 cubic yards of solid waste and 20 million gallons of sludge have been dumped into the quarry.

The quarry is in a Silurian Age dolomite of the Niagaran Series. This unit is a major aquifer in northeastern Illinois. Therefore, it is reasonable to assume that there is a high potential for groundwater pollution from this facility.

Additional study is needed to determine the local pumpage from the shallow dolomite aquifer and obtain water samples where possible. The

sump water from the nearby Material Service quarry has been sampled and the results will be forthcoming. Local groundwater movement has undoubtedly been influenced by pumping (4000gpm) from this sump. However, the degree of influence is unknown at this time.

In light of past disposal practices at this site, it is suggested that the Agency require the following prerequisites for the granting of the requested variance:

1. Develop an effective groundwater monitoring program.
2. Extinguish the underground fire.
3. Grade previously filled areas to minimize ponding of precipitation and prevent runoff from entering the pit.
4. Provide a final grading plan designed to minimize infiltration of precipitation into the fill.
5. Take other action as necessary to reduce the pollution potential of the site.

cc: Northern Region ✓
Lorie Breitkopf - Enforcement Programs
Michael Nechvatal - Variances
Thomas Cavanagh - Permit Section
William C. Child

JJB/amd

03396 MAR-5

Time Collected: 11°° AM Lab #

SPECIAL ANALYSIS FORM

Date Collected: 3-2-79 Date Received 3-5-79

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF LAND/NOISE POLLUTION CONTROL

COUNTY:	FILE HEADING:	FILE NUMBER:
Cook	Mt Cook/Rondelle Illinois	03[illegible]

SOURCE OF SAMPLE: (Exact Location)

Sample taken from roll off box receiving dewatered sludge produced by a vacuum filter process

PHYSICAL OBSERVATIONS, REMARKS: Well mixed brown - clayey material

TESTS REQUESTED: Acid digest

Jim Brossman Tim Brossman
COLLECTED BY: TRANSPORTED BY:

LABORATORY
~~Environmental Protection Agency~~
Division of Laboratory Services
2121 W. Taylor Street
~~Chicago, Illinois~~ 60612

RECEIVED BY: S Rathore DATE COMPLETED: 3/15/79 DATE FORWARDED: 3/16/79

Al - 6.0
As - 0.002
Ba - 0.05
Cd - 0.002
Cr (total) - 2.20
Co - 0.055
~~Cu~~
Fe - 15
Pb - 0.13
Hg - 22
Mn - 0.18
Ni - 0.0
Se - 0.00
~~Ag~~ 0.00
V - 0.0
Zn - 0.26

J Daugherty - Results expressed in mg/gram. X 10^6 = PPM

C003396

LPC-8A 4/77 (NOT FOR DATA PROCESSING)

03395 MAR-5

Time Collected: 11:00 AM Lab #

SPECIAL ANALYSIS FORM

Date Collected: 3-2-79 Date Received 3-5-79

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF LAND/NOISE POLLUTION CONTROL

COUNTY:	FILE HEADING:	FILE NUMBER:
Cook	McCook / Reynolds Aluminum	03100606

SOURCE OF SAMPLE: (Exact Location)

Sample was taken from a roll-off box receiving dewatered sludge produced by a vacuum filter process

PHYSICAL OBSERVATIONS, REMARKS: Yellowish brown clayey material

TESTS REQUESTED: 4E bore water leach

COLLECTED BY: Jim Brossman TRANSPORTED BY: Jim Brossman

LABORATORY: Environmental Protection Agency
Division of Laboratory Services
2121 W. Taylor Street
Chicago, Illinois 60612

RECEIVED BY: D Patterson (Leach) DATE COMPLETED: 3-21-79 (Leach) DATE FORWARDED: 3-22-79

Al — 55.0	Mg — 0	J Dougherty
As — 0.000	Mn — 0.00	DSM
Ba — 0.1	Ni — 0.0	
Cd — 0.00	Se — 0.00	
Cr (Tot) — 0.45	Ag — 0.00	
Cu — 0.41	Na — 0	
CN — 0.01	Zn — 0.0	
Fe — 0.0		
Pb — 0.00		

RECEIVED
APR 26 1979
ILL. E.P.A. – D.L.P.C.
STATE OF ILLINOIS

C003395

LPC-8A 4/77 (NOT FOR DATA PROCESSING)

MS

Not for computer

04042 APR19 McCook

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF LAND/NOISE POLLUTION CONTROL
CHEMICAL ANALYSIS FORM

Key for Determining Type of Monitoring Point

(S) Surface Water	(G) Ground Water	(L) Leachate	(X) Special
(1) Upstream	(1) Monitor Well	(1) Flow or seep	(1) Soil
(2) Mid-site	(2) Private well	(2) Pond	(2) Waste
(3) Downstream	(3) Spring	(3) Collection System	(3) Other
(4) Run-off	(4) Lysimeter		
(5) Impounded	(5) Public W S		

Name (Private Well, Stream, Spring, Impounded Water only): Sump from Material Service, McCook

(1) LPCSM010 (8) — SITE INVENTORY NUMBER (9) (16)

MONITOR POINT NUMBER (17) (20) — DATE COLLECTED (21) 041279 (26)

McCook — Co. - LPC — REGION (27) N

(Location) / (Responsible Party)

Legal (1); Illegal (2); Indicate One: (28) — Board Order (X) (29)

Time Collected 3 30 a.m. p.m. — Unable to collect sample (X) (30)

Stick-up (31) (35) ft. — Depth to water (from T.O.C.) (34) (36) ft.

Sample temp. (37) (39) — Background (X) (40)

Ground water sampled by (Indicate one): (1) Bailing; (2) Pumping; (3) Other (Specify) effluent from sump pump (41) 3

Sample Appearance: odor less. color less.

Collector comments: Sample taken from effluent of sump in quarry adjacent to Reynolds Aluminum pit

J. Brown — Collected by — D.L.P.I. — Div. or Company

Jim Brinkman — Transported by — D.L.P.I. — Div. or Company

LAB USE ONLY

Lab No. C004042

Date Rec'd 5/1/79

Rec'd by [illegible] Time 9:15 a.m. p.m.

Sample temp. acceptable YES NO

Sample properly preserved YES NO

Date completed 5-3-79

Date forwarded 5-4-79

Supervisor Daugherty

Name Illinois Environmental Protection Agency, Division of Laboratory Services

Address of Lab 2121 W. Taylor Street, Chicago, Illinois 60612

LPCSM020 Lab Comments:

(27) (36) RECEIVED

(37) (46) MAY 7 1979

(47) (56) I.E.P.A. – D.L.P.C. NORTHERN REGION

(57) (66)

(67) (76)

Private Lab (X)

IEPA Lab (X) (77) X

		PARAMETERS*	PPM*
		LPCSM030	
27	X	Alkalinity[1]	370
31	X	Ammonia as N	1.63
37	X	Arsenic As	0.000
44	X	Barium Ba	0.0
49		BOD -5	
53	X	Boron B	0.4
58	X	Cadmium Cd	0.00
64	X	Calcium Ca	132.2
69	X	COD	20
73	X	Chloride Cl	155
		LPCSM040	
27	X	Chromium Cr (tot)	0.00
33		Chromium Cr^{+6}	
39	X	Copper Cu	0.00
45	X	Cyanide CN	0.01
52		Fecal Coli (#/100 ml)	
56	X	Fluoride F	0.4
61	X	Hardness $CaCO_3$	770
65	X	Iron Fe	0.3
70	X	Lead Pb	0.00
		LPCSM050	
27	X	Magnesium Mg	64.1
32	X	Manganese Mn	0.03
38	X	Mercury Hg	0.0000
46	X	Nickel Ni	0.0
51	X	Nitrate-nitrite N	0.4
56		Oil and Grease	
60	X	pH (Units)	9.0
63	X	Phenolics	0.01
70	X	Phosphorus P	0.09
76	X	Potassium K	7.0
		LPCSM060	
27	X	T.O.E. (150°C)	1250
31	X	Selenium Se	0.001
38	X	Silver Ag	0.00
44	X	Sodium Na	66.1
49	X	SC (umhos/cm)	1497
53	X	Sulfate SO_4	345
58	X	Zinc Zn	0.0
63			

*Analyses are to be performed on unfiltered samples. *Values exceeding no. of places shown are reported in the lab comments section; tests requested but not run should also be explained in the lab comments section.

[1]Alkalinity is to be determined as ppm of $CaCO_3$ at pH 4.5.

Hazardous Waste

LPC-8 REV. 7/77